Typological-regional differences in the development of productive forces and demographic processes in the course of the transformation of European society

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TYPOLOGICAL-REGIONAL DIFFERENCES IN THE DEVELOPMENT OF PRODUCTIVE FORCES AND DEMOGRAPHIC PROCESSES IN THE COURSE OF THE TRANSFORMATION OF EUROPEAN SOCIETY

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Abstract: The transition process from feudalist to capitalist (from dominantly agrarian to dominantly industrial) society developed differently and at a different time in different regions of Europe. The nature of these processes was influenced by the type of the social relations and by the results of the socio-political (revolutionary or by the way of reforms) changes taking place in different ways in different European states. The nature of agricultural development depended on the nature of the economic activity of great landlords and peasantry and on the nature of their mutual relations. The following types of social structure and development can be distinguished in Europe in 18-19th centuries: 1. capitalist farmers - hired workers (England-Northern France), 2. aristocracy - peasant smallholders (Mediterranian, Central Europe), 3. great landowners - free peasant landowners - landless peasantry and hired workers (Scandinavia), 4. the "Junker" type entrepreneur landlord - dependent peasant smallholders - landless peasantry and hired workers (Eastern Europe).

Traditionally mankind is regarded about 200-300 years ago to have crossed the line separating Old Times from Modern Times. This "new era" did not come simultaneously to different parts of Europe. On this account and because of the highly complicated nature of the process it is not an easy task to determine the chronological borderlines of the transformation period. The process of transition (according to the Marxist school of thought transition from one socio-economic formation to another), the formation of a "new world" or "new society" involves quantitative as well as qualitative growth and changes. New features and factors replace the old ones; a new system emerges which in time matures and expands. From the scientific point of view it is especially rewarding to study the stage of the emergence of a new system - this is the phase that may provide new knowledge of the inner mechanism and driving forces of the process. We share this interest with a number of colleagues whose recent studies have considerably enriched our knowledge of this formative (or introductory) phase. The aspect of development in the center of attention determined the label of this phase given by different researchers: "eve of the industrial revolution", "proto-industrialization", "agrarian revolution", "demographic revolution". K. Marx called the period (and the process) of the previous accumulation "prologue to capitalist accumulation".

It must be said that "proto-industrialization" is not just a term, but in some aspects an attempt to revise the existing conceptions on the emergence of capitalist society. On the one hand the conception of "proto-industrialization" is born from the anti-Marxist ideas of W. Rostow concerning the stadial development of society. But some of the supporters of this concep-

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tion as historian H. Schultz from GDR has correctly mentioned, spontaneously come nearer to Marxism as they criticize the old bourgeois conceptions of the leading and decisive role of the ruling classes and state, drawing attention to the creative role and historical significance of the activities of the "lower classes" (that is the masses) in the process of the emergence of capitalist society. However, the concept of "proto-industrialization" tends to overstress the importance of economic development, unfairly overshadowing the factors of social and revolutionary development.(1)

It would be wrong to limit the observation of the transitional period of the prologue - to a certain degree one must also study the period of the maturing and further development of the new system of production and relations of production.

In the present case we are going to concentrate our attention on the problems of regional and typological differences in the development of European productive forces (first and foremost in agriculture) during the period of transition. To begin with we must confess that we are not in a position to give an overall analysis of economic development that would embrace the history of industry and the development of the market. S.D. Skazkin has correctly pointed out that the history of the transition from feudalism to capitalism "... in the different countries squires different shades, goes through different phases in different order and in different historical epochs."(2) But in order to better understand those differences one must have an idea of the general nature of the process.

The historical significance of the said period is highly appreciated by the authors of the recently published "Economic History of Europe": "Between 1780 and 1850, in less than three generations, a far-reaching revolution without precedent in the history of mankind, changed the face of England. From then on the world was no longer the same." For the mankind there opened up a "completely different world of new and untapped sources of energy ...".(3) Not only the material conditions of the development of mankind changed, but also the human society itself - from the rural peasant agricultural society to the urban industrial society.(4)

Changes in the demographic development of Europe left a deep impression on the minds of contemporaries (and constantly on those of the historians dealing with the period).

During the period under observation the population of Europe began to grow very fast. While in 1550-1680 the population of Western Europe grew only by 18 %, during approximately the same period - 1680-1820 - the indicator was 62 %. England stands out for twice as intensive population growth as in other countries (while in 1750 the population of England was 6 millions, in 1800 it was already 9 and in 1850 18 millions).

In the more developed countries at that time thanks to the advancement of agricultural technolgy and the spread of new crops in the dynamics of the general volume of agricultural production acute fluctuations became rarer; when one crop failed one could replace it with another. Having analyzed data on the agricultural development and population trends in Switzerland at the end of the XVIIIth century C. Pfister came to the conclusion that "... neither disastrous harvest failures nor booms in grain prices were certain indicators of high mortality. This suggests that human ecology had reached a remarkable degree of immunity against the effects of a limited meteorological and economic stress."(5) In the XVIIth-XVIIIth centuries in most areas of Europe according to J. de Vries the level of economic integration was

sufficient "... to loosen greatly the asserted links between weather and harvests and between harvests and economic life more generally."(6)

At the time under observation mankind was rising above the subsistence level. General studies of economic history include approximate but still evidently realistic data according to which in the old pre-industrial society the yearly fluctuations constituted about a quarter of the general harvest volume. At the same time the agricultural worker could on the average produce only 20-30 % more food than he used up.(7) Under these conditions one cannot speak of extended renewal of production. The whole of surplus production could be annulled by crop failure (besides a large part of it was regularly expropriated by feudals) - "... periodical subsistence crisis became inevitable."(8)

Together with professor H. Ligi we studied registers of socage holdings and taxes imposed on them (in German Wakenbücher), that had been drawn up on the basis of the peasant laws of 1804 in the Baltics; there we came across information on the amount of grain produced and used in peasant households. Pertinent calculations revealed that a certain grain surplus (up to 5 % of the amount of grain produced) appeared only in the larger peasant households. As soon as harvest fell to three points (and in the XVIIIth-XIXth centuries 28 % of all the years were lean years)(9) there was a deficit. In order to rise the production, the area ought to have widened considerably or crop capacity grown twofold.

The increase in population growth may first of all be explained by the increase in the production of foodstuffs. Agricultural production grew in the XVIIIth century in various parts of Europe.

"In the XVIth century, and more clearly in the XVIIth century, the crop capacity of manorial fields had a tendency of declining", writes R. Berthold, who has studied the data of manor farm as well as peasant household agricultural activities in Germany. "In the XVIIIth century it is the other way round. The crop capacity of all grain goes up in all manors."(10)

At the close of the XVIIIth century according to contemporaries the agricultural production of Northern Flanderns gave 79 % more food than was necessary for the feeding of its population.(11)

Concerning the agricultural development of XVIIIth century England D. Mingay writes that according to some calculations grain production increased twofold in that time and that this was caused by "... partly the 20-bushel increase in the crop capacity of one acre and partly by the extension of arable land under wheat from 1,5 million to 2,25 million acres."(12) XVIIIth century France as well witnessed considerable growth of agricultural production as new land was taken into use and the intensity of agrarian activities heightened.(13)

It must be remembered that all this took place before the factory-produced plough and threshing-machine came into common use and before the transition to crop rotation and use of artificial fertilizers.

What made it possible?
In the introductory part of his recently published book a young Swedish historian C.-J. Gadd points out that in the XVIIIth - first half of the XIXth century Sweden a paradoxical in its nature phenomenon can be detected - up to the 1850's there is no data of the wide-spread application of new agricultural technology, and the population number is going up; but nevertheless

the country that has always brought in bread in order to feed its inhabitants, suddenly starts exporting agricultural products.(14)

Already contemporaries noticed that during the XVIIIth - first half of the XIXth century agriculture was undergoing some change.(15) It has been suggested that on the whole the significant changes in the fields of agriculture occurred 30-50 years before the industrial revolution.(16) The increase of agricultural production was for the most part achieved thanks to the efforts and know-how of peasants. We must confess that we still know very little of the concrete history of agricultural development. Peasants, who could have contributed internal knowledge of the everyday home economy, were not strong in literacy and did not leave us their "farming accounts" or other economic documents (with the exception to some extent of Netherlands). Documents of seignioral archives contain but little information on agricultural technology and peasant economy. Source materials reveal almost nothing, and the historiography of this question and period also tells us very little of agricultural development.

But during the recent decades, as the up to that time relatively unknown mass sources were submitted to analysis (in particular by Swedish historians) or more complicated methods (historical-ethnographic and others) were taken into use, the sources started yielding bits of information. Research of this kind helps throw additional light on the period of the "domestic improvement" of agricultural tools, which preceded the transition to the use of factory-made agricultural machines (in the middle of XIXth century).(17) In one of the recently published generalizing works, in the process of agrarian transformation the period of improvements and rationalization (mostly of biological character) is brought out as an independent first stage, which preceded the period of the implementation and spread of agricultural machines.(18) Historian-ethnographer U. Bentzien, who has studied the development of agricultural technology in Germany, complains in his monograph that very few data on the development of agricultural technology reflected in the wills of the peasants of this territory has been preserved and worked through (and the wills themselves are to be found only sporadically).(19) But even on the basis of the scarce source materials he managed to ascertain that already in the XVIth century the peasants had switched from the sickle to the more efficient scythe and used the harrow with "iron cogs".(20) Innovations like the sowing of fallow with summer crop, the plough with adjustable clubs, field roller, came into use already in the XVIth-XVIIth centuries, but first of all in these regions where instead of the manorial agriculture the peasant smallholdings dominated.(21) In the XVIIIth century in the farms of Northern Germany the "swing plough" brought in from England came to common use; landlords as well as peasants took to applying the harrow with "iron cogs".(22) The scythe is used in rye-harvesting in Northern Germany from the XVIIth century onwards, while peasants of the densely populated Southern Germany kept faith with the sickle.(23) Two observations of Bentzien are of great interest. First of all he draws attention to the tendency of "feudal reaction" apprehensible among the ranks of feudal landlords, as when they desisted from using the more efficient and time-saving team of horses for ploughing and returned to the less productive but more enduring team of oxen.(24) Secondly he points out that the new farming implements spread more quickly and widely among the peasants who lived in regions West of Elbe.(25)

And especially vivid picture about the "stage of improvements" can be drawn on the basis of Swedish materials.
According to C.-J. Gadd on the territory of the 5 parishes analyzed by him in the years 1750-1850 the number of inhabitants rose by 70 %, while the

acreage under crop increased 100 % - consequently, crop capacity per inhabitant increased by 25 %.(26) That this was not an isolated phenomenon finds proof in the fact that in these years the population of Sweden grew twofold.(27) The considerable accretion of cultivable land(28) was made possible only by the spread of improved, more efficient tools. Towards the end of the XVIIIth century in the whole region analyzed by Gadd the sickle and been replaced by scythe and harvest time had shortened considerably.(29) The plough in common use in the XVIIIth century required the work of 3 persons, while plough with the iron coulter that started to spread from the beginning of the XIXth century only two persons could manage.(30) While earlier the sown fields had to be ploughed thrice a year, from the 1820's onwards one ploughing could be substituted with harrowing (using the improved harrow).(31) As the result of all this the quantity of tractive units for one field unit from 1750 to 1850 decreased by half.(32) The spread of potato-growing from the first years of the XIXth century proved very effective - one unit of potato-field could feed thrice as many people as the same measure of grain-field.

The most vivid and earliest data of the development of agricultural technology and methods of agricultural development stem from the Netherlands. As M.-J. Tits-Dieuaide has pointed out, data on fodder-growing and liquidation of fallow date back to the XIIIth-XIVth century, and all this bears witness of the high intensity of agriculture, the main bearers of which were peasant smallholders.(33) According to contemporary practicians in Flanders at the close of the XVIIIth century 2/3 hectares sufficed to feed a family of five.(34) By the XVIIth century in the Netherlands the three-course system had long since been replaced by improved agricultural systems.(35) Besides the operators of large and middlesized farms peasant smallholders continued to play an important part in agricultural progress.(36)

Eastern Europe presents a different picture.
The pronounced local diversity of agricultural technology in Russia up to the beginning of the XIXth century might be proof of deep-rooted local traditions and stagnation phenomena. Those who have studied the agrarian development of Russia in the XVIIIth century in the typical regions where peasants were cruelly exploited by feudals have found no instances of peasants having improved farming implements.(37) But at the same time in the North of European Russia where the feudal dependence was comparatively slacker, during the first half of the XIXth century peasants added more than 10 new details to the plough. The home-made plough of the peasant became a tool that could be used in peeling fallow, with or without a mould-board, for ploughing at different depths.

It leaps to the eye that specialist who have studied the development of agricultural technology in a region of the absolute domination of the corvee system like the Baltic region, have been able to find very few data of improved agricultural implements up to the XIXth century - according to the information at their disposal the iron plough and harrow came into use there as late as in the 1830's.(38)

The inefficient sickle was still used in Bohemia and Upper Austria up to the middle of the XIXth century.(39) Equally tenaciously and long was it used in the Baltic region.

Production growth was a result of the development of productive forces. But the character and rate of their development to a certain degree depended on the nature of the social relations. K. Marx stresses that "... the revolution in the modes of production of industry and agriculture made necessary a

revolution in the general conditions of the social process of production ..."(40) If those general conditions were shaping up too slowly, they could turn into "unbearable fetters" of production. While characterizing works on the transition from feudalism to capitalism published in last years, G. Lemarchand writes that as a rule all the authors come to the conclusion that "... revolutionary events often represented the decisive stage in the process of transition, but their role was not similar in all countries ..."(41)

Discoveries and technological innovations by themselves cannot ensure progress - conditions for their application and dissemination must also be present. Of the countries East of the river Elbe we know that there the new agricultural machines invented long ago and more widely spread in Western Europe were taken into use very slowly and with much delay. The threshing-machine devised in England at the end of the XVIIIth century became known in the Baltic Region in a few years' time, but it was taken into common use only after the middle of the XIXth century.(42) In Poland the first grain harvesting machines were taken into use in the 1820's but they became common only in the second half of the XIXth century.(43) K. Marx wrote that in the slave-owning states of USA "... down to the date of the civil war, ploughs constructed on old Chinese models, which turned up the soil like a hog or a mole, instead of making furrows, were alone to be found."(44)

According to the data at our disposal the growth of agricultural production accelerated in England in the XVIIIth - first half of the XIXth century. Even speedier was the increase in Northern America - during the first half of the XIXth century agricultural production there grew fivefold. During the same period in the countries East of Elbe it grew only by 71 %.(45)

Development rates of productive forces - first and foremost in agriculture - in many respects depended on the socio-economic character, living conditions and activities of their major bearers: big landowners (seigniors) and smallholders (peasants), and on the character of their relations. On the one side we can see various types of big landowners: 1. feudals of the old type, 2. junkers, who managed manorial economy already with the help of wage labourers, 3. landlords who did not interfere at all in matters of economy and gave the capitalist-farmer a free hand. On the other side we come across: 1. feudally dependent (or enslaved) peasants, 2. independent "parcel" peasant smallholders or 3. we may find a situation where peasantry as a class had in principle already ceased to exist and in its place we are dealing with agricultural wage workers. On the basis of this classification we have constructed our experimental typological scheme of agrarian development during the period of transition studies by us.

In the agrarian development of the Europe of that period a peculiar dualism clearly stands out. It is most apparent when we contrast the socio-economic development of England with the development of the regions East of Elbe. As we know in the former case the agrarian development from the XVIth-XVIIth centuries is characterized by the diminishing size and importance of the seignioral domain, by the weakening of the personal dependence of the peasant from the feudal. In the latter case it is the other way round: the economic significance of the feudal domains is growing, as they turn into small-scale estates (folvarks) orientated at commodity production and the personal subjection of the peasant to the feudal is growing stronger. East of Elbe "... the capitalist period announced its approach in the village as a period of large-scale agricultural production based on the corvee labour of serfs."(46) The liquidation of the feudal mode of production differs as well: in the one case it is forcefully terminated in the course of bourgeois revolutions in the other case it is done through reforms which the ruling

TYPES AND STAGES OF AGRARIAN DEVELOPMENT IN EUROPE DURING THE PERIOD OF TRANSITION FROM FEUDALISM TO CAPITALISM

Great landowners	Tillers	Types and regions of agrarian development
1. feudals	feudally dependent peasants	The feudal type of economy (Old Times)
2. great landowners who did not interfere in the farming of peasants	"parcel" peasants burdened with the village community rules	stage of transition (France after 1789)
3.	independent peasants	stage of transition (Scandinavian countries)
4. great landowner with curtailed feudal rights	small peasants with restricted land ownership	the incomplete "Prussia Way" (Russia from 1861 up to 1917)
	Both burdenes with remnants from the corvée system	
5. landlords	farmers and agrarian proletariat	England
6. junker-squires	agrarian proletariat	the "Prussian Way" (Prussia)

classes are constrained to carry through. Problems related to the genesis of this dualism are well covered in literature. In explaining the victory of the feudal reaction in the region East of Elbe scholars point out different factors. Some refer to the international division of labour (Eastern Europe started supplying the industrially developed West with foodstuffs and raw materials). It has also been indicated that unlike the West-European bourgeoisie the politically feeble bourgeoisie of East European countries did not support the anti-feudal struggle of peasantry. The mass transition to corvee is in the concrete historical situation said to have been the "lesser evil" for feudals as well as peasants.

It must be said that in the concrete historical reality the typological regions were not separated from one another by a "Chinese Wall". As G. Heitz has pointed out, West of Elbe one could come across big landowners whose farming methods belonged to the Junker type, and to the East there were regions of farm-economy.(47)

In the following typological scheme we have differentiated types on the "stage of transition". The victorious bourgeois revolutions of Western Europe and the bourgeois agrarian reforms carried out in Eastern Europe during the first half and middle of the XIXth century to a greater or lesser extent shook the ruling order. The transformation of the feudal large-scale farming into the capitalist counterpart took some time. It was during this stage of transition that the small holdings of peasantry could temporarily with some success compete with the large-scale economy of the great landowner. Apparently such was the case in Sweden, where the rural artisans made headway and were actively participating in land-reforms.

Agricultural development was speedier and more successful in regions where the peasant-farmer economy could evolve quite unencumbered by the counteracting of either great landowners or the restrictions set by the village community. "There must be neither manorial nor 'nadel' (plots of land given to peasants with the reform of 1861 - J.K.) - type land ownership, there must be only the new free land ownership," V.I. Lenin underlined.(48) Such was the process of development in North-America (in a more restricted form also in England), where there were no feudal hindrances to the capitalist agriculture. "Without the 'purgation' of Medieval land relations and organization ... the bourgeois change in agriculture cannot take place", wrote V.I. Lenin. "Capital must - in the sense of economic necessity must - arrange for itself new agrarian orders that would answer the new conditions of free commercial agriculture."(49)

The first country to start on the road of the intensive development of agricultural production was the Netherlands. The historical roots of this process can be traced back to the XIIth-XIVth centuries, and up to the XVIth century the major bearers of it were the peasant smallholders who were engaged in vegetable-growing and in cultivating such crops which required intensive treatment, such as flax. Regardless of the fact that as late as at the close of the XVIIth century no more than one third of the farms in certain regions of Flanders were larger than 20 acres and farms of 5-10 acres dominated, agriculture was based on wage labour.(50) In the Netherlands capitalist agriculture emerged earlier than in other parts of Europe. It was also the first region where innovations were introduced into agriculture and where the capitalist way of production achieved such maturity that the link between the processes of economic and demographic development weakened - the rate of population growth was already in the XVIIIth century relatively low.

When in the second half of the XVIth and also in the second half of the XVIIIth century the prices of agricultural production were high, the great landowners of England found it profitable to stop demanding the traditional feudal duties of peasants, instead turning to expropriation of peasant land (which they put to use as pastures for commercial sheeprearing) or to long-term leasing. Often this "clearing of estates" was of downright predatory character. "The looting of Church property, the villainous expropriation of crown lands, the ravaging of the communal property, accompanied by usurpation and merciless terrorism, transformation of the feudal and communal property into the contemporary private property - such are the various idyllic methods of primary accumulation", wrote K. Marx. "In this manner the field could be won for capitalist agriculture ... and for the urban industry the necessary influx of the outlawed proletariat created."(51) In the XVIIIth century this resulted in the turning of the old demesne with its unused reserve lands and pastures into great landed property of the new type, dealt out for short-time monetary rent, the functioning of which was based on wage labour.(52)

Bourgeois revolutions only completed these processes. "The revolutions were restricted to certain compromises, without giving anything to peasants or securing the protection of the interests of great landowners". Nevertheless, the 'Great Revolution' and the 'Glorious Revolution' were important landmarks; they were bourgeois in the sense that they removed those institutional barriers, which had up to that time obstructed the free development of capitalism ...", writes G. Lemarchand. "Therefore we may regard the period between the years 1680 and 1715-20 as the time of the disappearance of the feudal way of production ...".(53)

The bourgeois revolutions of the XVIIth-century England gave a severe blow to the privileges and might of the feudal lords and traditional communal arrangements.

The so-called parliamentary enclosure that was especially intensive in the XVIIIth-century England changed the face of the village beyond recognition. From then on the central figure was the capitalist-farmer, who employed wage labour and in order to increase efficiency made considerable capital investments to improve agricultural methods and implements.(54) Already from the XVIIth century England was on its way to the adoption of new agricultural methods including the rotation of fodder crops and the liquidation of fallow. The improved methods of animal husbandry provided agriculture with large quantities of manure and in the end increased productiveness.(55)

In the XIXth century France was far behind England as far as the rate of agricultural development was concerned - while in England from the close of the XVIIth century up to the World War I output grew 12 times, in France it grew only 5 times.(56) A peculiarity of France was that the revolution of 1789 secured the small-scale property of the peasantry.(57) Many authors point out that while the revolution of 1789 led to radical changes in the political superstructure, to the liquidation of feudal great landed property, in everyday life the village changed but little. Degrees issued by the revolutionary government confirmed the rights of village communes. In 1792 all the communal lands that had been expropriated by the feudal landlords were returned to the village communes and the peasants' right to let their cattle feed on the harvested fields was legally confirmed.(58) Later on peasants started portioning out the communal lands, in the course of which the social differentiation of peasantry deepened.(59) In defending their rights against the feudal lords the village communities doubtless had a progressive role. In capitalist society, however, the rules and traditions

of village communities became hindrances in the way of agricultural progress.

In Scandinavia we are dealing with a different historical situation. During the Middle Ages the subjection of peasant to lord was there considerably weaker than in many other European countries. From the close of the XVIIIth century all the feudal restrictions disappeared from the path of the selling and buying of land. Thus the peasants' "chances and motives for improving the cultivation of land, taking into use new lands and investing in agriculture"(60) improved, writes C.-J. Gadd while characterizing the situation in Sweden at the end of the XVIIIth century. The economic incentive and initiative of peasantry secured the speedy realization of agrarian reforms (enskifte, laga skifte), as the result of which the traditional strip-field system was replaced by the structure of village cultivable land, which corresponded to the new methods of the organization of land exploitation.

The "clearing of estates" - a necessary precondition for the successful development of rational agriculture - was carried out not so much by the landlords (as in England), as thanks to the active participation and support of the peasants themselves.

The development of the regions East of Elbe was quite different.
It is characteristic of the XVIIIth century that the feudal dependence and traditions were confirmed in those regions as well where they had temporarily been weakened as the result of the devastating wars or acquisition of new lands. This was convincingly shown by I. Wellmann in the case of the regions of Hungary liberated from the Turkish yoke. At first every peasant or citizen could freely cultivate land in these sparsely populated areas. But soon the settlers again became subjected to and controlled by the squires and village communities.(61) I. Wellmann gives an example: while at the close of the XVIIIth century separate portions of land were handed out to citizens of Debrecen engaged in agriculture, soon the strip-field system was introduced anew and the rule of periodic redistribution (every 7 years) laid down.(62) The more enterprizing and richer peasants had to put in much energy and means in order to gain the right of dividing their holdings into separate farms.(63)

At the end of the XVIIIthe century the corvee laws spread to the recently colonized expanses of Southern Russia.

Differences in the rates of socio-economic development and the role of peasantry in it can partly be explained by the historical-geographical conditions. In many regions of Eastern Europe an important factor was the abundance of reserve lands for colonization and ploughing of newly cleared land, which one could not find in Central and Western Europe. "In West-European countries ... in the epoch of the bourgeois-demographic change the whole territory was already occupied. Every improvement of agricultural technology created something new only in the sense that it enabled to invest new quantities of labour and capital into the land", writes V.I. Lenin. "In Russia the bourgeois-democratic change takes place in the conditions where the progress of agricultural technology and the growth of the actual freedom of population made possible not only the additional investment of labour and capital into old lands but also the utilization of the 'boundless' expanses of the near-by new lands."(64)

In our opinion all the information on the different types of agrarian development has clearly demonstrated how closely were related the rates of economic and demographic development with the character and chronologic suc-

cession of social, revolutionary changes. One can grasp the essence of the transformation processes of European society in 1750-1850 only if one regards them as the change from one socio-economic formation to another, transition from feudalism to capitalism. However, it must be said that a profounder analysis of this process is an extremely complicated task. In order to achieve this one ought to show how human work turns into market commodity, how the feudal rent turns into capitalist rent (agricultural profit). Analysis of the above-mentioned process calls for special study methods an corresponding sources.

In the present case we have confined ourselves to observing agrarian development and demonstrating that much of it may be explained by social change, the essence of which is the process of the maturing and developing of capitalist relations. This resulted in the changing of people's mentality, their attitude towards labour. Some scientists have recently quite convincingly demonstrated that in feudal society where the peasant economy was heavily dependent on nature, there always had to be an "unmanouverable reserve" of labour, which in good years was simply wasted.(65) Under capitalism attitudes towards labour and time changed radically. While displaying ruthlessness in exploiting wage labour, the capitalist - entrepreneur was at the same time very careful about "labour" as an object for which he had to pay money: "... the capitalist is careful ... to see that his workmen are not idle for a single moment."(66) The capitalist-entrepreneur was not burdened with prejudices and traditions when it came to increasing his profits.(67) "And so the capitalist entrepreneur is aware - to a degree that no previous exploiter is aware - of how much he stands to gain from this or that technical change."(68)

The main historical merit of capitalism is that it revolutionized production. As K. Marx pointed out: "The technical basis of that industry is therefore revolutionary, while all earlier modes of production were essentially conservative."(69)

We now come to the question, how does all this stand in relation to the application of mathematical methods and contemporary computer technology in historical science. Our understanding of the processes of the transformation of European society discussed above deepened considerably and gained much corraborational strength thanks to the work done by E.A. Wrigley, R.S. Schofield and M.P. Haines in the field of historical demography, F.F. Mendels in the history of industrialization and I.D. Kovalchenko and L.D. Milov, who studied the development of home market. All these authors have used electronic computers. The results of these studies have also been used for the present paper. Results of the study of agrarian development in a number of European countries conducted under the guidance of E. Le Roy Ladurie were recently analyzed with the help of the pattern recognition method, using computers, and we came to the conclusion that a certain acceleration of development rates started from the middle of the XVIIIth century.(70) Therefore we feel justified to say that results of the present study are also the results of the application of electronic computers and mathematical methods.

FOOTNOTES

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